

# Military Activities in Space: Law, Policy and the Expected Maturation of Tactically Relevant Space Control

This article examines some of the issues facing military strategists today in developing and expanding Space technologies in light of existing international law and U.S. policy. It focuses on their application in the area of tactically relevant Space control, especially in the realm of negating adversary Space capabilities (arguably the most controversial form of Space control). The article begins with a general discussion of how the application of technology to warfare influences strategic development and moves to the more specific discussion of military uses of recent and emerging Space technologies. This is followed by a portrayal of the emerging Space environment in regard to the growth in satellites and Space-faring nations, setting the stage for an examination of existing international treaties and U.S. policies in regard to Space-based systems. Finally, this essay looks at U.S. plans for Space control negotiation, and refines the discussion to a particular service. In this case, the Army is used to show how Space control must be included as a critical part of its transformation over the next 10 to 15 years.

By LTC Tom James

## Technology and Warfare: the Uncomfortable Partnership

**W**inston Churchill was prophetic if not original in his words and sentiments on page 25. Military historians from Herodotus and Thucydides have addressed the inherent imprecision in humankind's ability in predicting outcomes of war. But Churchill's words were crafted in a vastly different backdrop than those of statesmen before his time. Churchill grew up in a world with ever-accelerating technological advances that had significant impact on the fields of battle.

Submarines, airplanes, railroads, wireless radio, machine-guns, just to list a few of the more obvious, were changing the face of major conflict. Where such technological developments as the crossbow, stirrup and gunpowder had taken centuries to mature and become an integral part of military operations, these advances had immediate effects on operations. Today's new military technologies can find their way onto the battlefield before they have completed most of their "required" testing (Joint Surveillance Target Attack Radar System (JSTARS) in DESERT STORM is a prime example).

Over the last century and into the present one, political and military strategists and theorists have both bemoaned and praised technologies for their effects on how nations have developed offensive and defense military strategies. A great example is the current debate over the U.S. Army's decision to transform into a more information-dependent force while "selling off" its heavy armor-based force designed to fight the Cold War battles of the latter half of the previous century.

Despite one's position in that argument, it is clear that

nuclear, missile and aircraft technologies, as well as tremendous advances in information technologies, are now woven into the new international reality of globalization. Thomas Friedman (2000) describes globalization as the new dominant force in international politics, resulting, to a large degree, from the fall of the Berlin Wall in 1989 and the tremendous increase in information technologies in the 1990s. Space technologies have become an inseparable part of this globalization, both in terms of military and more peaceful applications. The "dual use" capabilities of much of this technology straddles the arenas of peace and wartime operations, which exacerbates the debate over militarization of Space. While Everett Dolman (2002) suggests that the continued, expanded militarization of the Space regime is not necessarily inevitable, he also notes that history and the study of international politics seem to deem it is likely.

## The Emerging Military Environment in Space

As mentioned, Space technologies are advancing at a rapid rate. Of greater significance is the dramatic increase in the number of countries that either directly launch or operate satellites, or purchase Space-based products. The U.S. Army recognizes this in stating that, "Space is populated by an ever-increasing number of military, civil and commercial systems competing for orbital positions, bandwidth and profit. Nations that have Space programs are rapidly increasing in number" (TRADOC Pamphlet (PAM) 525-3-14, p. 4).

It also recognizes the importance of Space capabilities as "a primary enabler of the information revolution. Space and information management capabilities are rapidly converging to the point of interdependence" (p. 4). The military is becoming more aware that "Space systems are critical in moving high volumes of data at great speed, over vast dis-

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***Let us learn our lessons. Never, never, never believe any war will be smooth and easy, or that anyone who embarks on that strange voyage can measure the tides and hurricanes he will encounter. The Statesman who yields to war fever must realize that once the signal is given, he is no longer the master of policy but the slave of unforeseeable and uncontrollable events. Antiquated War offices, weak, incompetent or arrogant Commanders, untrustworthy allies, hostile neutrals, malignant Fortune, ugly surprises, awful miscalculations — all take their seat at the Council Board on the morrow of a declaration of war. Always remember, however sure you are that you can easily win, that there would not be a war if the other man did not think he also had a chance.***  
**— Winston S. Churchill, *My Early Life* (1930)**

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tances ... to enable the formation of interactive global databases that provide support to industry, government and military forces” (p. 4). Furthermore, the U.S. Army anticipates that:

*Adversaries will attempt to use Space for hostile purposes. Domestic and international commercial Space organizations are expanding our capabilities, as well as those of our adversaries. The majority of new satellites will be communication systems, but new imaging satellites will also be in operation. As a result, states, transnational organizations, factions or individuals will be able to buy militarily significant Space products or services. In fact, one-meter resolution imagery, sufficient for tactical targeting (if timely) is commercially available today. Other commercial products include radar imagery that penetrates clouds; positioning, velocity, navigation and timing (PVNT) services; and a multitude of highly mobile, highly capable communication systems. Adversaries will not restrict themselves to the use of military satellites, but will use a combination of both military and commercial satellites. Therefore, Army operations must assume an adversary will have at least limited access to overhead observation capabilities and telecommunications satellites, capable of supporting operations in remote or undeveloped areas, as well as in urban environments. Finally, just as the Army Objective Force seeks Space-based capabilities to be delivered directly to forces in the field, technology advances will also allow adversary forces to quickly receive Space-based products in a mobile, tactical environment (TRADOC PAM 525-3-14, p. 5).*

This growth in Space capabilities has occurred at breakneck speed in relation to technology advancements in previous centuries. “Since the end of the Cold War, there has been an explosion of commercial Space ventures. States, private organizations and individuals can now purchase Space products, or access Space services on the open market, at relatively low cost, and without having to build extensive Space infrastructures” (TRADOC PAM 525-3-14, p. 4). In light of all this, it is not a tremendous leap of faith to assume Al-Qaeda and other enemies of the U.S. in the Global War on Terrorism are using Space-based capabilities to a large extent; in time their dependence on Space-based capabilities will surely ex-

pand as availability and understanding of their benefits grow.

The Report of the Commission to Assess United States National Security Space Management and Organization, published in 2001 and more commonly referred to as the Space Commission Report, “focused its assessment on national security Space activity” (p. 2). Its findings reaffirmed the reliance of the United States on Space-based systems as well as identifying vulnerabilities to U.S. national security. “The political, economic and military value of Space systems makes them attractive targets for state and non-state actors hostile to the United States and its interests” (p. 12). It identified both a need to expand military activities in regard to Space capabilities, as well as continuing to develop policies and influence international law to address our dependency on these capabilities. “In order to extend its deterrence concepts and defense capabilities to Space, the U.S. will require development of new military capabilities for operation to, from, in and through Space. It will require, as well, engaging U.S. allies and friends, and the international community, in a sustained effort to fashion appropriate ‘rules of the road’ for Space” (pp. 12-13).

### **U.S. Policy on Controlling Space**

In his renowned tome on the political history of Space strategies, Walter McDougall (1985) notes the conflicted approach by U.S. policy makers in developing U.S. Space policy during the Eisenhower and Kennedy administrations. They faced the challenge to develop policy that protected Space for peaceful purposes for the good of all mankind, while at the same time that responded to the potential of Armageddon-like conflict in the frigid, biting reality of the Cold War arms race. Officials recognized the need to use all resources at hand, to include advancements in satellites, to reduce this risk. McDougall notes that “Eisenhower had to allow for all possibilities by speaking of idealism and acting with realism” (1985, p.178). [The resulting Space policy “reflected this complex-  
(See *Law, Policy*, page 54)

ity. Hence, U.S. Space strategy aimed at the establishment of a legal regime in Space that complemented the American propaganda line of openness and cooperation in Space and held out hope of agreements” to slow the arms race also “preserved American freedom to pursue” ... “military missions in Space as” required to ensure U.S. national security] (McDougall, 1985, p. 178).

The Space Commission Report, drafted some 40 years after Eisenhower’s original Space policies, appears to more candidly address the realist view in regard to the future of Space-based capabilities. It stated that “in the coming period, the U.S. will conduct operations to, from, in and through Space in support of its national interests both on the earth and in Space”. It goes on to add that as “with national capabilities in the air, on land and at sea, the U.S. must have the capabilities to defend its Space assets against hostile acts and to negate the hostile use of Space against U.S. interests” (2001, p. 11). It reaffirms this by noting that “... we know from history that every medium — air, land and sea — has seen conflict. Reality indicates that Space will be no different” (2001, p. 10). The drafters of the report acknowledged that “given this virtual certainty, the U.S. must develop the means both to deter and to defend against hostile acts in and from Space. This will require superior Space capabilities” (2001, p. 10).

U.S. policy is clear on its understanding of the importance of being able to conduct Space control operations. In Department of Defense Directive (DODD) 3100.10 (Space Policy), dated July 9, 1999, Secretary William S. Cohen stated that “the capability to control Space, if directed, will contribute to achieving the full dimensional protection, battlespace dominance, and information superiority necessary for success in military operations.” But how does this U.S. stance harmonize or conflict with existing international law and policies?

### International Space Treaties and Agreements

Everett Dolman notes that “the international outer Space regime is composed primarily of four generally recognized treaties and a fifth unratified... treaty on the Moon and celestial bodies” (Dolman, 2002, p. 129). (These five treaties and agreements can be found at the Web site (see References) for the Office for Outer Space Affairs (OOSA) of the United Nations Office in Vienna.)

In addition, the U.N. Charter as well as other international binding treaties and resolutions have application in regard to military Space activities. For example, the International Telecommunications Union specifies agreements for protecting allocated satellite frequencies from interference, a condition that would limit jamming operations.

The underpinning of the international Space-related treaties and agreements is the concept addressed in the preamble of the first such treaty, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, 1967 (most often referred to as the Outer Space Treaty or OST). This treaty, much like international law regarding Antarctica, states that the “exploration and peaceful use of Space is in the common interest of man” (Dohlman, p. 129).

The OST specifically addresses military prohibitions in Article IV. These include a prohibition against placing weapons of mass destruction, to include nuclear weapons, in the Earth’s orbit, on celestial bodies, or “station(ing) such weapons in outer Space in any other manner.” It is important to note that, with the exception of the unratified Moon Treaty, the international law custom of “what is not prohibited is allowed” is applied to these treaties by most states. Given this

interpretation of the OST, this prohibition seems to allow conventional (or perhaps better stated, weapon types other than weapons of mass destruction (WMD)) and their use in outer Space. The article goes on to state that “the establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres (sic) on celestial bodies shall be forbidden.” It allows for the use of military personnel in Space and on celestial bodies for peaceful purposes only (OOSA Web site).

It also recognized in Article III that “State Parties to the Treaty shall carry on activities in the exploration and use of outer Space ... in accordance with international law, including the Charter of the United Nations.” It explained that this was “in the interest of maintaining international peace and security and promoting international co-operation and understanding” (OOSA Web site).

It is interesting to note that although the OST talks directly to military maneuvers on celestial bodies, it only prohibits WMD type weapons in orbit around Earth. This was most likely the case because satellites up to this time were primarily for military uses (imaging and communications) for the two major powers of the Cold War (U.S. and Soviet Union) and the two nations with the most influence in the United Nations. They were not willing to discard this advantage without fully knowing if they could trust the other to do the same. The importance of Space as a place for military advantage was apparently clear to both. Caught up in the frenetic current of the Cold War arms and missile race, the competition for the militarization of Space found no eddy. Both superpowers went headlong in exploring possible military uses of Space.

An important part of the ratified treaties or agreements is the recurring theme of the “state of registry,”

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analogous to flag ships of the high seas. It is important to understand from this comparison, in light of other international law, the sovereign status afforded Space objects. It is therefore easy to understand the stance that many nations take that offensive action aimed at one of their Space objects is equivalent to attacks on one of their ships at sea, and tantamount to an act of war. To carry this further, it is also important to note that in the current evolving global economy, attacks on one satellite could have much more disastrous effects on a nation's power base than attacks against any one sea vessel.

Perhaps the Space Commission Report best sums up current U.S. positions in addressing interaction with the international community in regard to Space activities:

U.S. activity in Space, both governmental and commercial, is governed by treaties and by international and domestic law and regulations, which have contributed to the orderly use of Space by all nations. As interest in and use of Space increases, both within the U.S. and around the world, the U.S. must participate actively in shaping the Space legal and regulatory environment.

To protect the country's interests, the U.S. must promote the peaceful use of Space, monitor activities of regulatory bodies, and protect the rights of nations to defend their interests in and from Space. The U.S. and most other nations interpret "peaceful" to mean "non-aggressive"; this comports with customary international law allowing for routine military activities in outer Space, as it does on the high seas and in international airspace. There is no blanket prohibition in international law on placing or using weap-

ons in Space, applying force from Space to Earth or conducting military operations in and through Space.

The U.S. must be cautious of agreements intended for one purpose that, when added to a larger web of treaties or regulations, may have the unintended consequences of restricting future activities in Space (Space Commission Report, 2001, p. 17, emphasis added).

### **Potential Space Control Technologies**

In his report on emerging Space military capabilities, Robert Windrem, an investigative reporter for NBC News, lists several different types of potential or emerging capabilities that focus on negating Space-based capabilities. His first possibility seems the most drastic, and the one clearly outlawed in international treaties: the detonation of small nuclear weapons in Space placed to affect satellites in orbit. One possibility that seems more likely is the use of electronic countermeasures (jamming) to block out portions of the Earth from satellite-based signals, or even placing jamming satellites in orbit.

He also describes microsattelites and nanosatellites "armed with rockets or lasers to disrupt or destroy other satellites" and ground-based lasers or other high energy beams to "blind or destroy satellites cameras and sensors" (Windrem, 2004).

Windrem (2004) also discusses how forces can "hide or disguise surveillance targets as the satellites make their fairly predictable passes overhead." This measure, defensive in nature, applies equally to the

U.S. and its allies as more and more nations and commercial companies place highly sophisticated imaging satellites in orbit. As discussed earlier, virtually anyone with proper financing can find a company willing to sell them current satellite imagery.

In addressing antisatellite-type weapons, Windrem (2004) quotes William Burrows, an authority on spy satellites, as stating that "(t)he best asat (antisatellite) is not a weapon that detonates next to an enemy satellite," but rather one that uses a "... signal that would tell the satellite to take the rest of the afternoon off." This, however, opens up a side of the Space race that governments such as the U.S. may not wish to start. It is reasonable, however, to assume that potential future adversaries are pursuing technologies similar to those discussed by Windrem.

Leonard David (2003) addresses U.S. concerns with China's focus on military activities in Space by identifying reports that "China appears to be sharpening its war fighting Space skills, from creating anti-satellite weaponry, building new classes of heavy-lift and small boosters, as well as improving an array of military Space systems." Moreover, he notes that Chinese military official of pursuing so-called asymmetrical military strategies hinged on targeting Space-based communications and reconnaissance system to achieve advantage over Space-dependent opposing forces (David, 2003).

If these reports are true, the Space race is well under way, whether recognized or not by the U.S. public and government leaders. Regardless, it is clear that not-too-distant future war will involve Space control operations from strategic to tactical levels of war,

and U.S. policy makers must constantly evaluate current and evolving Space-related policy to ensure it accounts for this eventuality.

### **U.S. Military Forces and Tactically Relevant Space Control**

Joint Publication 3-14 (Joint Doctrine for Space Operations) states that “(s)pace control operations will provide freedom of action in Space for friendly forces and, when directed, deny the same freedom to the adversary. They include offensive and defensive operations by friendly forces to gain and maintain Space superiority and situational awareness of events that impact Space operations” (p. IV-5). It adds that Space control includes “the broad aspect of protection of U.S. and U.S. allied Space systems and negation of adversary Space systems ... Space control may involve activities conducted by land, sea, air, Space and/or special operations forces” (p. IV-5). DoD guidance recognizes the need for integrated Space control in military operations and acknowledges that each service has a particular role to fill in this mission area.

As noted earlier, DODD 3100.10 explains the importance of controlling Space for success in future military operations (p. 3). One service in particular, the U.S. Army, serves as a good illustration of this concept. The Army is in the process of an overarching transformation of its doctrine and organization to better prepare itself for future warfare.

TRADOC Pamphlet 525-3-0 The Army in Joint Operations states that “information superiority is essential to the concept of simultaneous, distributed operations” on which emerging doctrine is based. This information superiority depends to a great extent on the “conduct (of) counter-recon and counter-RSTA (Reconnaissance, Surveillance, Targeting, and Assessment) operations” throughout all Army operations (p.16-17). Given the

current and foreseeable proliferation of Space-based systems into the next decade, mitigating the effectiveness of Space-based reconnaissance and communication capabilities available to enemy forces must play a major role in the Army’s Future Force to meet this requirement.

TRADOC Pamphlet 525-3-14 (Concept for Space Operations in Support of the Objective Force) offers more detail on the Army’s consideration of Space control in emerging doctrine and force structure.

The contribution of Space control to the Army’s Objective Force, and ultimately to the JFC, cannot be over-emphasized. The Objective Force will employ far more sophisticated Space control capabilities to negate adversary benefit from valuable Space-derived and Space-reliant information. Through electronic, kinetic, or directed energy means, and other capabilities under development, the adversary’s military decision process will be degraded. The inherent expectation in the reliance on Space assets is assured access to these capabilities across the full spectrum of operations, and the protection of key points of vulnerability — most significantly, ground segments/stations. The Objective Force must rely on far-term joint capabilities for assured access to Space segments, while providing protection of key ground segments/stations. Conversely, potential adversaries have similar Space capabilities (particularly command, control, computers, communications, intelligence, surveillance and reconnaissance capabilities) and a growing ability to interfere with U.S. access to, and use of, Space capabilities. Lack of effective Space control capabilities will place joint and Army forces at risk in a future conflict. The Objective Force operational concept must address the emerging Space control requirements for 21st Century military operations (p. 19).

Noted military strategists Colin

Gray and John Sheldon explain that it “is important that the control of Space is recognized today as a truly vital requirement of the U.S. armed forces. Yet, the United States to date has deployed no, repeat no, forces to affect many elements of the Space control mission.” (Gray and Sheldon; p. 239, emphasis in original text). Whether or not Space control systems have been developed since these comments, it is clear from the discussion in this article that they are needed for the future military force. Moreover, U.S. policy must support their effective use in support of ensuring national security.

### **Conclusion**

The Space Commission Report notes that it is necessary for the U.S. to participate actively in shaping the Space legal and regulatory environment. Clearly, U.S. development and management of national policy in influencing the international community in the domain of Space is critical to national security. These linkages must flow in a coherent and supporting manner from the highest levels of grand strategy to full integration into tactical military missions.

The unforeseeable and uncontrollable “morrow” that Winston Churchill alludes to at the beginning of this essay will be a time too late to develop the Space control capabilities required to face the nation’s potential adversaries. These capabilities must be in place and integrated into national policy and military operations on the eve of that morrow (which, for all we know, may be today, or perhaps have already occurred on September 10, 2001). U.S. policy makers and military strategists and planners must work now to ensure they produce the policy, doctrine and capabilities to achieve Space superiority across all levels of warfare. This is imperative to ensure the full-spectrum dominance called for in emerging U.S. military strategy.

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## Space force ... from page 3

and coordinate all in-theater Space activities. Because these officers typically know very little about Space, AFSPC has provided a senior Space officer to fill the position of director, Space Forces, to conduct this mission and provide needed expertise. The result has been that the director of Space Forces becomes knowledgeable of air operations and providing Space support to that mission, but has only indirect understanding of the JFLCC, JFMCC, and JSOTF use of Space. If a separate Space force were created, then we would almost certainly have a JFSCC integrating Space into theater operations, and better support for the entire force.

The 2000 Commission on Space Organization spoke to the Air Force's failed stewardship of the Space force in its Jan. 11, 2001 report. The commission stopped just short of calling for a separate U.S. Space corps (modeled on the U.S.M.C.) or U.S. Space force, and instead put all the pieces in place to quickly create one of these organizations if the Air Force doesn't successfully perform the Space mission. If you step back and look at the commission's recommendations, you see they have put all the structure in place to quickly

create the U.S. Space force. The Undersecretary of the Air Force would become the Secretary of the Space Force, the National Security Space Office would become the secretariat staff and AFSPC becomes the service staff and forces. The budget has also been created through the designation of the Space military funding program 12. The dissolution of USSPACECOM into USSTRATCOM was the final step in normalizing the Space forces and preparing for the creation of the Space force. Space forces are now exactly like ground, air and sea forces with no dedicated combatant commander guiding their operations.

The only compelling argument against creation of the U.S. Space force is that the creation of the Air Force in 1947 was a mistake and it should be recombined with the Army, thereby enhancing jointness. Since this is not a viable argument, then it should be assumed that there will be a creation of a U.S. Space force, and that the only remaining question is when.

A question often asked of me over the last few years on the U.S. Space force issue was the role of Army Space Forces in the U.S. Space force. This is a question better debated amongst Army

Space officers, and I offer my thoughts, although they are not conclusive on this matter.

One option is that Army Space officers spend their early years as they do now, working in the Army in non-Space positions. Then at the appropriate time, they transfer to the U.S. Space force, ensuring that the U.S. Space force is joint in nature and connected to the Army. The other option, and the one I think we should follow, is to follow the paradigm of Army Aviation forces and Air Forces. In the Space force case, Army Space Forces conduct the mission of integrating Space power into Army operations and providing forces operating in near-Space and in-theater integrating capabilities, in a manner similar to Army Aviation, working with the U.S. Space force and in the Joint Force Space Component Command when formed.

Now this is a topic worthy of debate amongst Army Space officers! As for the creation of U.S. Space force ... it's just a matter of time!

- Glen C. Collins  
Senior Space Systems Analyst  
SPARTA, Inc.